COUNCIL AGENDA: 02/25/20
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ITEM: 6.3

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: Kerrie Romanow
Matt Cano

SUBJECT: SEE BELOW

DATE: February 4, 2020

Approved D. DSyL Date 2/6/2020

SUBJECT: APPROVAL OF AMENDED AND RESTATED DESIGN-BUILD CONTRACT FOR THE FINAL DESIGN AND CONSTRUCTION OF THE HEADWORKS PROJECT AT THE SAN JOSE-SANTA CLARA REGIONAL WASTEWATER FACILITY

RECOMMENDATION

(a) Approve the Amended and Restated Design-Build Contract with CH2M HILL Engineers, Inc. for the final design, construction, commissioning and acceptance testing of the Headworks Project at the San José-Santa Clara Regional Wastewater Facility with a base Guaranteed Maximum Price in an amount not to exceed $126,874,142.

(b) Approve a ten percent construction contingency in the amount of $12,688,000 for adjustments to the base Guaranteed Maximum Price in accordance with the Amended and Restated Design-Build Contract.

OUTCOME

Approval of the Amended and Restated Design-Build Contract will establish the Guaranteed Maximum Price for the final design, construction, commissioning, and acceptance testing of the Headworks Project.

EXECUTIVE SUMMARY

Preliminary treatment, the first step in the San José-Santa Clara Regional Wastewater Facility (RWF) treatment process, is provided by a headworks facility that removes inorganic material such as sticks, stones, grit and sand from the influent wastewater to protect and reduce wear on downstream processes and equipment. The existing headworks facility consists of two separate structures: a duty headworks (Headworks 1-circa 1970) and a wet-weather headworks (Headworks 2-circa 2008).

The City's Plant Master Plan recommended construction of a new headworks to replace the aging Headworks 1 and enhancements to Headworks 2 so it can continue to serve as the backup and wet-weather headworks.

In June 2018, Council approved a design-build contract with CH2M Hill Engineers, Inc. (CH2M). The design-build contract consists of a preliminary services phase and a design-build phase. In the preliminary services phase, the design-builder performs subsurface investigations and develops the design to a 60-percent level of completion. Amendments to the design-build contract and a Guaranteed Maximum Price (GMP) for the final design and construction of the Headworks Project (Project) are then negotiated based on this initial design work. In the design-build phase, the design is taken to 100-percent, and construction, commissioning, and acceptance testing are completed.

The preliminary services phase of the Project has been completed and staff is now recommending Council approval to move to the design-build phase pursuant to the Amended and Restated Design-Build Contract (Amended Contract).

As part of the GMP development, CH2M worked with their designated General Contractor, Kiewit Infrastructure West Co. (Kiewit) to develop bid packages, obtain competitive bids from subcontractors and vendors, and price work to be self-performed. City Staff and CH2M participated in numerous workshops and meetings to negotiate the terms and conditions of the Amended Contract and to finalize the GMP. Because the progressive design-build delivery model takes a different approach to pricing than the traditional low-bid design-bid-build delivery model, staff and its consultants put considerable time and effort into the GMP negotiations to ensure a fair Project cost for RWF ratepayers.

Given the due diligence performed as part of the GMP negotiations to validate costs, including 1) development of an independent bottom-up cost estimate, which was adjusted to reflect current Bay area construction market conditions and which was benchmarked against San Francisco Public Utility Commission's (SFPUC) ongoing $360 million headworks project; 2) value engineering; 3) negotiation of overhead and profit; 4) procurement of subcontractors and process equipment using a competitive, best-value, selection process; and 5) cost-benefit analysis of converting to a design-bid-build delivery method, staff recommends approval of the Amended Contract with a not-to-exceed GMP of $126,874,142 and a contingency of $12,688,000.

BACKGROUND

Project Description

Preliminary treatment, the first step in the RWF treatment process, is provided by the headworks facility, which removes inorganic material such as sticks, stones, grit and sand from the influent wastewater to protect and reduce wear on downstream processes and equipment. Due to the consistency and corrosivity of the incoming sewage, the mechanical and electrical equipment

must be robust and reliable. In addition, the headworks must be able to respond to a wide range of hydraulic loading conditions to account for daily and seasonal fluctuations.

The existing headworks facility consists of two separate structures, a duty headworks (Headworks 1) and a wet-weather headworks (Headworks 2). Headworks 1 has been in operation for over 50 years, has a rated capacity of 271 million gallons per day (mgd), and includes single-rake screens, grit removal using aerated grit chambers and detritors, screenings and grit handling facilities, and pumping facilities. Headworks 2 has been in operation for over 10 years, has a rated capacity of 160 mgd, and includes multi-rake screens, vortex grit removal, screenings and grit handling facilities, and a pump station.

With the aging Headworks 1 facilities requiring regular repairs and rehabilitation, the City's Plant Master Plan recommended decommissioning Headworks 1 and expanding Headworks 2 to handle future anticipated peak flows of up to 400-mgd. Subsequent evaluations identified the need for a new duty headworks facility (Headworks 3) to replace Headworks 1, and outlined modifications required for Headworks 2 to improve operational reliability and performance so that it can continue to serve as the backup and wet-weather headworks. The Headworks Project will construct a new headworks facility and make the needed modifications to Headworks 2. The decommissioning of Headworks 1 is not included in this Project. **Attachment A** shows the location of the existing Headworks 1 and 2 facilities and the proposed location of the new Headworks 3 facility.

Design-Build Contract

On June 19, 2018, the Council approved the original design-build contract with CH2M in the amount of $5,666,354 for the preliminary services phase of the Project.[1] Council also approved a ten percent City-held design contingency of $566,635 and authorized the City Manager to execute a separate amendment to the contract for CH2M to perform subsurface investigations to inform its design work in an amount of $1,000,000 with a separate contingency of $1,000,000 for this subsurface work.

The preliminary services phase of the work was concluded in January 2020 in the amount of $6,147,765, which included the use of $481,411 of design contingency for further subsurface investigation work. The preliminary services work consisted of initial investigations of existing site conditions, development of the basis of design report, detailed design to a 60-percent completion level, and development of the definitive project submittal, which included the GMP, and led to the recommended Amended Contract that contains the terms and conditions for the design-build work to complete the Project.

As part of the design development, key criteria were established including site selection, flow and loading criteria, process configuration and equipment, and civil, mechanical, HVAC,

[1] May 29, 2018 Council Memo for design-build contract: https://sanjose.legistar.com/View.ashx?M=F&ID=6298296&GUID=21436F30-C836-4470-BD79-CE8724719812

electrical, and instrumentation requirements. Preliminary investigations included geotechnical studies and subsurface investigations of utilities and regulated substances, which was performed to reduce the risk of discovering unknown conditions during construction.

A key element of the preliminary services phase was negotiation of the GMP. As part of the GMP development, CH2M worked with their designated General Contractor, Kiewit Infrastructure West Co. (Kiewit) to develop bid packages, obtain competitive bids from subcontractors and vendors, and price work to be self-performed. City Staff and CH2M participated in numerous workshops and meetings, between June 2019 and December 2019, to negotiate the terms and conditions of the Amended Contract and to finalize the GMP.

CH2M submitted its final technical and cost submittal to the City for the Project in January 2020. This submittal included proposed revisions to the terms and conditions of the original design-build contract, the GMP and a schedule for completion of the Project.

ANALYSIS

CH2M's technical and cost submittals have been reviewed by City staff and the City's consultants to assess the suitability of the proposed scope of work, evaluate the adequacy of the plans and specifications, and validate the proposed pricing in CH2M's cost model. The Amended Contract is priced as a guaranteed maximum price, meaning that the City will pay CH2M on a defined cost-reimbursable basis subject to a maximum limit. The CH2M portion of the work will be open book (i.e., complete visibility of all costs) and subject to shared savings (i.e., if the work is completed for less than stated in the GMP, the City gets 70 percent of the cost savings and CH2M gets 30 percent), while the work by their subcontractors, including Kiewit, will be mostly lump sum and not subject to an open book process or shared savings.

City Staff and CH2M participated in numerous workshops and meetings, over a six-month period, to negotiate the terms and conditions of the Amended Contract and the GMP. Because the progressive design-build delivery model takes a different approach to pricing than the traditional low-bid design-bid-build delivery model, staff put considerable time and effort into GMP negotiations to ensure a fair project cost for RWF ratepayers. To this end, the design-builder was required to develop a cost model early in the Project and update it at key milestones. Key components of the cost model include:

1. Direct Construction Costs (including General Contractor, subcontractors, and equipment)
2. Engineering Costs (e.g., completion of design from 60-percent to 100-percent, engineering services during construction, and startup and commissioning)
3. General Conditions Costs (e.g. Field staff, field offices, utilities, safety equipment)
4. Overhead and Profit
5. Design-Builder Contingency
6. Escalation

To ensure fair pricing, the following actions were taken:

1. Evaluation of new headworks site location to determine the optimal location from the perspective of functionality, constructability, and cost.
2. Establishment of process configuration, equipment selection, and design criteria to ensure an effective, reliable, and maintainable headworks.
3. Development of an independent, bottom-up, cost estimate by the City's owner's advisor consultant (OA), CDM Smith, based on the 30-percent design documents.
4. Reconciliation of the OA's and CH2M's 30-percent estimates by the CIP's third-party cost estimating consultant, Leland Saylor Associates, that took into consideration the current Bay Area construction market conditions and which benchmarked cost elements of the City's Headworks project to San Francisco Public Utility Commission's (SFPUC) ongoing $360 million headworks project.
5. Value engineering session led at the 30-percent design level by one of the CIP's VE consultants, Hazen and Sawyer.
6. Review of CH2M's 60-percent estimate by the OA.
7. Negotiations with CH2M on overhead and profit.
8. Negotiations with CH2M on general conditions.
9. Monte Carlo risk modeling to validate the design-builder contingency amount.
10. Procurement of subcontractors and process equipment using a competitive, best-value, selection process at the 60-percent level of design.
11. Evaluation of the pros and cons of bidding out Kiewit's work.
12. Evaluation of the pros and cons of converting the Project to design-bid-build.

Prior to procuring the design-builder for the Project, in November 2017 the OA produced a Project Definition Report (equivalent to a Conceptual Design) that outlined the project scope and provided an initial cost estimate for budgetary purposes. This initial GMP budget was $100 million, however, as was stated in the May 29, 2018 Council Memo, based on feedback from the three proposers during the proposal phase, there was concern that this budget was inadequate. The low budget estimate was attributable to difficult site conditions and the strong Bay Area construction market, wherein municipalities are forced to bid for available construction labor against large high-tech companies. To address the budget concerns, one of the first tasks of the preliminary services phase was to evaluate the project scope and look at alternative site options to lower the project costs. Based on this evaluation, a new site was selected for Headworks 3 and a revised budget of $123.5 million was developed and included in the 2020-2024 Adopted CIP for the Project.

Subsequent GMP estimates were submitted by CH2M at key milestones (Basis of Design Report, 30-percent, 60-percent and the final GMP proposal). The mechanism for reviewing and negotiating direct costs was to have third-party consultants (CDM Smith and Saylor) review and

comment on the costs. This led to reductions in direct costs and general conditions costs. The final GMP of $126.9 million represents a 2.75 percent increase over the $123.5 million budget. Most of the increase was due to market conditions, with a portion of this increase due to scope added from other CIP projects that could be performed more cost effectively as part of the Project.

In addition to negotiating direct costs, staff negotiated the overhead and profit (OHP) markups being charged by CH2M and Kiewit on the direct engineering and construction costs. The initial values submitted by CH2M were negotiated down as shown below:

Description	Initial Value	Final Negotiated Value
CH2M DB Fee (similar to OHP)	9.5 percent	8.75 percent
CH2M General Conditions (GC) Fee	9.5 percent	7.4 percent
Kiewit OHP	18 percent	10 percent

For reference, the Cogeneration Facility Project's DB fee is 7.8 percent and the GC fee is 7.7 percent, and on the Dewatering Project, the DB Fee is 8.9 percent and the GC Fee is 11.2 percent. Note that these fees are project dependent based on the complexity and risk profile of the project.

Although it is difficult to put an exact value on the savings that resulted from negotiations, due to the constant updating of all components of the cost model, staff estimates that savings are on the order of $8 million.

Approximately 56 percent ($71 million) of the GMP was based on negotiations and includes the work that Kiewit and CH2M will be self-performing. The remaining 44 percent ($56 million) was competitively bid out, including subcontractors (electrical, I&C, HVAC, etc.), major process equipment (bar screens, grit equipment, pumps, etc.) and materials (concrete, rebar, piping, etc.).

The Amended Contract has provisions for shared savings between the City and CH2M, in the event that the actual cost of the work at completion is less than the GMP. Additionally, the Amended Contract contains acceptance testing requirements and guarantees for the minimum performance for all major process equipment (bar screens, screenings compactors, raw sewage pumps, grit tanks, grit pumps, grit classifiers, and odor control system). In addition, the system hydraulics must be verified based on available flows to ensure that the project components can convey the required peak flow without impacting the upstream collection system. The Amended Contract also contains provisions for liquidated damages associated with construction delays or raw sewage pump efficiency.

The Amended Contract requires CH2M and their subcontractors to participate in the City's Owner Controlled Insurance Program (OCIP) for the RWF CIP. The OCIP provides a number of key insurance coverages, such as commercial general liability, workers' compensation, and builder's risk insurance, but does not provide comprehensive coverage for all required

insurances. The Amended Contract requires CH2M and their subcontractors to provide proof of coverage for required insurances outside the scope of the OCIP.

There is the potential for the scope of work to increase as the design is developed from 60-percent to 100-percent and during the course of construction. If the scope of work increases for certain causes specified in the Amended Contract, CH2M is entitled to an adjustment to the GMP to account for the increased work. One potential cause of increased scope during construction are unknown subsurface utility conflicts and other site conditions that differ from those anticipated. The Project includes a significant amount of subsurface work to connect the new headworks facility to the existing headworks. As discussed, CH2M has done some subsurface exploration work as part of the preliminary services to reduce the risk of conflicts. However, the scope of the Project is such that it was not possible to explore all potential areas that will be impacted by the Project. Experience on prior RWF projects has shown that certain existing infrastructure is in substandard condition, and once uncovered or disturbed, may need to be repaired or replaced. These additional costs may not be included in the GMP and would need to be covered by City-held contingency. The Amended Contract contains a Design-Builder's contingency of $3.9 million, which is approximately 4 percent of the direct costs. The Design-Builder's contingency is included in the GMP and covers risks that CH2M has assumed under the Amended Contract. Staff is also requesting that Council approve a City-held contingency of $12.7 million, which is approximately 10 percent of the GMP. The City contingency is held outside of the GMP and would cover costs associated with risks that the City has assumed under the Amended Contract.

Project Schedule
As part of the negotiations, the City and CH2M agreed to a project schedule for completion of the Project in accordance with the Amended Contract. Key milestones for the design-build work include:

- March 2020 – Notice to Proceed for Design-Build work
- January 2023 – Substantial Completion of Design-Build work
- June 2023 – Final completion of Design-Build work

CONCLUSION

Approval of the Amended Contract will allow staff to authorize CH2M to finalize the design and construct, commission and acceptance test the Project. The Amended Contract is the result of several months of detailed negotiations. Given the due diligence performed as part of the GMP negotiations and the significant risks associated with switching delivery methods at this time, staff recommends approval of the Amended Contract with a GMP of $126,874,142 and a City-held contingency of $12,688,000.

EVALUATION AND FOLLOW-UP

A progress report on this Project will be made to the Transportation Environment Committee and the City Council on a semiannual basis. Monthly progress reports of the RWF CIP will also be submitted to TPAC and posted on the City's website. No additional City Council action is anticipated at this time.

CLIMATE SMART SAN JOSE

The recommendation in this memo has no effect on Climate Smart San José energy, water, or mobility goals.

POLICY ALTERNATIVES

Alternative #1: Do not approve the Amended Contract; negotiate with CH2M to advance the design to 100-percent, prepare a bid package, and solicit bids to construct the facility using traditional design-bid-build).

Pros: Obtains market pricing from additional bidders.

Cons: Risks of not meeting completion date, potential failure of existing headworks equipment, and potential cost increase due to market escalation.

Reason for not recommending: Schedule maintenance is a major concern. Existing headworks equipment at the RWF ranges from 30 to 60 years of age, and has been subject to breakdowns of increasing frequency and severity. The risk of failure is made worse by delaying the completion of the Project. Delaying the solicitation of construction bids while completing the design to 100-percent and preparing a bid package for advertisement will likely result in cost increases, as the construction market shows ongoing escalation. The Project would not be able to take advantage of the significant schedule and cost benefits of early construction if this alternative was selected.

PUBLIC OUTREACH

As part of the Design-Builder procurement process an RFQ was advertised on BidSync on May 24, 2017.

This memorandum will be posted on the City's Council Agenda website for the February 25, 2020 Council Meeting following the TPAC meeting on February 13, 2020.

COORDINATION

This memorandum has been coordinated with the City Attorney's Office, the Finance Department, and the City Manager's Budget Office.

COMMISSION RECOMMENDATION/INPUT

This item is scheduled to be heard at the February 13, 2020 TPAC meeting. A supplemental memo with the Committee's recommendation will be included in the amended February 25, 2020 City Council meeting agenda.

FISCAL/POLICY ALIGNMENT

This Project is consistent with the Council-approved budget strategy to address rehabilitation and replacement of critical infrastructure and equipment at the RWF and to improve operational efficiency.

COST SUMMARY/IMPLICATIONS

1.	AMOUNT OF RECOMMENDATION:	$126,874,142
	Project Delivery*	$33,000,000
	Design-Build Work (GMP)	$126,874,142
	Contingency (10%)	$12,688,000
	Total Project Costs	$172,562,142
	Prior Year Expenditures	$11,712,955
	REMAINING PROJECT COSTS	**$160,849,187**

Project delivery includes $4.9M for project management during feasibility/development, $11.1M for project management during design, $2.0M for bid and award, $14.5M for construction management, and $0.5M for post-construction and project closeout. The estimated project delivery cost is 26 percent of the construction cost, which is in line with project delivery costs for capital projects of this magnitude at other wastewater facilities.

2. COST ELEMENTS OF CONTRACT

The City will pay CH2M on a defined, cost-reimbursable basis subject to a maximum limit (i.e. the GMP), above which the City is not obligated to pay for services that are not otherwise subject to reimbursement under the Contract. The GMP not-to-exceed price for the Project is as follows:

Third-Party Professional Services	$1,880,000
General Contractor	$59,574,446
Electrical Contractor	$13,186,000
I&C Integrator	$3,475,878
Other Subcontractors	$7,415,370
Process Equipment	$8,806,264
Final Engineering	$2,823,728
Engineering Services During Construction	$4,280,218
Startup and Commissioning	$1,739,105
Permitting and Other Costs	$170,000
Bonds and Insurance (outside of OCIP)	$1,890,293
Subtotal: Design-Build Costs	$105,241,302
General Conditions Fee (equivalent to 7.4% of DB Costs)	$7,800,000
Design-Builder Fee (8.75% of DB Costs excl. bonds & insurance)	$9,043,213
Cumulative Subtotal: Design-Build Price	$122,084,515
Design Builder Contingency	$3,932,907
Design Builder Escalation	$856,720
Cumulative Total: **Design-Build GMP**	**$126,874,142**

3. SOURCE OF FUNDING: 512 - San José-Santa Clara Treatment Plant Capital Fund

4. FISCAL IMPACT: O&M costs (Fund 513 - San José-Santa Clara Treatment Plant Operating Fund) are not anticipated to change significantly because the Project involves replacing the aging Headworks 1 with a new Headworks 3 of similar capacity. Some increase in hauling costs is expected due to newer, more efficient, equipment, which will result in increased screenings and grit removal. There will also be new costs associated with odor control for Headworks 3, which is not currently provided at the existing Headworks 1.

5. PROJECT COST ALLOCATION: In accordance with the recommendations set forth in the Capital Project Cost Allocations Technical Memorandum (Carollo Engineers, March 2016), this project is allocated 100-percent to flow.

BUDGET REFERENCE

The table below identifies the fund and appropriations to fund the contract recommended as part of this memo and remaining project costs, including project delivery, construction, and contingency costs.

Fund #	Appn #	Appn. Name	Total Appn	Amt. for Contract	2019-2020 Adopted Capital Budget Page	Last Budget Action (Date, Ord. No.)
512	7448	Headworks Improvements	$15,853,000	$12,687,414	V-135	10/22/2019 Ord. No. 30325
512	7449	New Headworks	$131,176,000	$114,186,728	V-136	10/22/2019 Ord. No. 30325
Total Current Funding Available			**$147,029,000**	**$126,874,142**		

Services performed by CH2M under this Contract Amendment will be authorized by a Notice to Proceed. There is sufficient funding in the appropriation for the GMP. Future funding is subject to the annual appropriation of funds and, if needed, will be included in the development of future year budgets during the annual budget process.

CEQA

File No. PP19-042, Addendum to the Final Program Environmental Impact Report for the San José /Santa Clara Water Pollution Control Plant Master Plan (Resolution No. 76858).

/s/
KERRIE ROMANOW
Director, Environmental Services

/s/
MATT CANO
Director, Public Works

For questions, please contact Kapil Verma, Principal Engineer, Environmental Services Department at (408) 635-4045.

Attachment

ATTACHMENT A

Headworks Project Site Map